



| UNIVERSAL  
| HOMES |

**ACCESSIBILITY  
IS BEAUTIFUL**

*This publication was developed by the Cerebral Palsy Foundation with the generous support of Chubb.*

*A special thanks to:*

- Karen Braitmayer
- Mary Lou Breslin
- Randy Earle & Leslie Haynes
- John Gidding
- Cathi & Steven House
- Carol Sundstrom
- Pat Wright & Deb Zeyen

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# FORWARD

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The Cerebral Palsy Foundation, with the generosity of Chubb, is proud to present Universal Homes - "Accessibility is Beautiful".

The Accessibility is Beautiful project highlights how universal design can be both functional and beautiful, both inspiring and empowering to its users.

Too often accessibility is overlooked or built solely with utility in mind, but inclusive design can change lives - and bring beauty to the environment.

Developed by experts in Universal Design, this look book will give you tips and renovation secrets to get you started in making your home truly accessible. Whether you're starting small or going all-in with a whole-home renovation, this book will give you great ideas to start conversations with your architect and get the most out of your project. All the homes in this book are featured in the YouTube miniseries "Universal Homes - Accessibility is Beautiful".



Photo Credit: House+House Architects

*“We’ve always realized that whether you’re a person with a disability or not has nothing to do with it. You could be a child with soapy hands and not be able to open up a door with a round doorknob. Design should be for everyone.”*

**- Cathi House  
House+House Architects**

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# UNIVERSAL DESIGN

All the homes included in this book were designed by architects, based on the principles of universal design.

Universal Design is defined as the design and composition of an environment so that it can be accessed, understood and, to the greatest extent possible, used by all people regardless of age, size, ability or disability.

By considering the homeowners' unique needs and abilities throughout the design process, these architects were able to create spaces that are a pleasure to use and inspiring to occupy.



# 7 PRINCIPLES OF UNIVERSAL DESIGN

## 1. Equitable Use

- Design is appealing and provides the same means of use to all individuals.
- Provisions for privacy, security, and safety are equally available.

## 2. Flexibility in Use

- There is choice in methods of use.
- Accommodations for right or left handed use.
- Allow for accuracy and precision as well as adaptable to the individual's pace.

## 3. Simple & Intuitive Use

- Use of the design is easy to understand.
- Any undue complexity is removed.

## 4. Perceptible Information

- Ambient conditions do not affect use.
- Consider individual's sensory abilities.
- Provide contrast between essential information and its surroundings.

## 5. Tolerance for Error

- Consider and minimize hazards and the adverse consequences of accidental or unintended actions.
- Provide fail-safe features.

## 6. Low Physical Effort

- Allow user to maintain a neutral body position.
- Minimize repetitive actions and sustained physical effort.

## 7. Size and Space for Approach and Use

- Provide a clear line of sight to important elements for any seated or standing user.
- Make reach to all components comfortable for any seated or standing user.
- Accommodate variations in hand and grip size.
- Provide adequate space for the use of assistive devices or personal assistance.







# CITY LIVING

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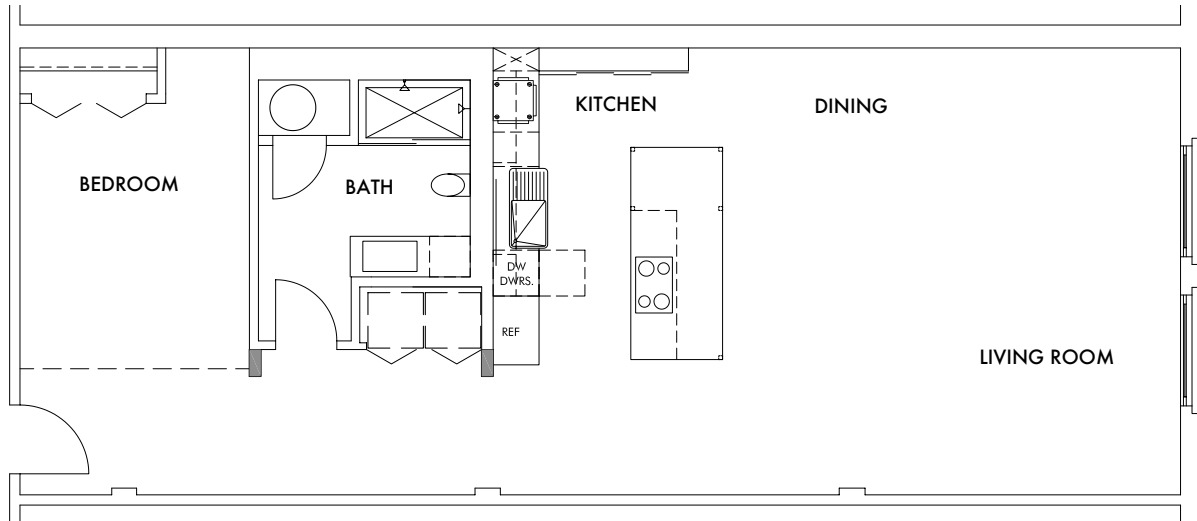
Randy Earle and Leslie Haynes live on the third floor of what used to be an old factory building in Seattle's Pioneer Square, Seattle's oldest neighborhood.

When they moved from Boston to Seattle in 2006, Leslie secured an apartment for them before they left Boston. It was advertised as an accessible downtown apartment complete with a wheelchair-friendly kitchen. However, upon arrival, they discovered that the building lacked an essential feature for wheelchair users: an entry ramp. The development company unapologetically explained that they had decided not to build one.

With the moving truck 12 hours from arrival, Leslie searched online for a loft-like space that could be transformed into the gritty ("authentic") urban dwelling of their dreams. When she found it, she then searched for the help she needed to make it happen. Searching the keywords 'wheelchair,' 'architects' and 'Seattle' brought her to the website of Studio Pacifica, a firm that specializes in code-compliance consulting services. Principal architect Karen Braitmayer referred her to architect Carol Sundstrom, and they began planning immediately.

# THE FLOOR PLAN

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# A BIG BEAUTIFUL BOX

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The floor plan is mostly open space, which Leslie describes as a “big, beautiful box.”

The open concept floor plan provides ample maneuvering space with few obstructions. The only walls in the loft are those that create the bathroom. Architect Carol Sundstrom used the bathroom location to separate the sleeping area from the main living space, which also includes the kitchen and dining areas. In total, the space is just over 900 square feet.

# MODERN KITCHEN

Randy and Leslie love to cook and wanted their kitchen to be the heart of their home, hosting friends and cooking lesson groups frequently. The 34" high island works for both seated and standing chefs, and the open end doubles as a breakfast table and seated workspace. The bottom-freezer refrigerator works well for Randy's reach, and bypass pantry doors allow for easy access without having to maneuver around swinging doors.





*“Being in a wheelchair is uniquely frustrating. When designing our home, we wanted everything to be easy for both of us.”*

**- Randy Earle**

# CUSTOM GRAB RAIL

This custom grab rail on the edge of the kitchen island was designed to provide support for Randy when he previously stood to cook. Now that he uses a wheelchair, he uses it to propel his wheelchair with one hand, even when holding a dish in his other hand. The bar doubles as a convenient towel bar.



*Photo Credit: Dale Lang*



*“The custom grab bar on the island was initially designed as a safety feature to give me something to use for balance when I stood for cooking. Now that I cook while seated, I use it to propel my wheelchair when my other hand is full.”*

**- Randy Earle**



*Photo Credit: Dale Lang*



# OTHER FEATURES

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Randy says he loves this sink as much as it is possible, or perhaps appropriate, to love an object. It is one of his favorite features in the kitchen. It was custom- designed with an integral drain board for drip-drying dishes and easy cleaning. The faucet is moved to the side and forward, within easy reach for Randy, and the drain is positioned in the rear corner to allow room for the garbage disposal underneath while also providing knee clearance.

This pull-along trolley is used to help bring dishes from the kitchen to the dining area. When moved from its parking position, it creates knee clearance below the counter and makes the corner cabinets easy to reach.



*Photo Credit: Dale Lang*



*Photo Credit: Dale Lang*

# BATHROOM

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The walls were color-matched to the grab bars to make them less obvious. The bypass sliding doors on the shower, wall hung vanity with slim sink, and knee space under vanity increase overall space for maneuverability.

The handheld shower can be height-adjusted for for both Randy and Leslie's preferences. In lieu of a built-in bench, a freestanding bench was chosen because it provides more room to lean backward when rinsing out shampoo.

At the sink, the pivoting mirror provides the optimal viewing angle, whether seated or standing. The countertop bracket was designed with an integral towel bar so that a hand towel would be within easy wheelchair reach.





Photo Credit: Dale Lang

# BEDROOM & ENTRYWAY

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A curtain the same color as the walls separates the entry hall and bedroom, creating a transformable space. When open, the bedroom area is larger, with more maneuvering space. When closed, the bedroom is concealed from guests.

Randy uses the portable bed handle to assist him when transferring from his wheelchair to bed, and it also serves as a safety feature for nighttime spasticity.







# REMOTE BAJA ESCAPE

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Situated in a secluded fishing village on the shores of the beautiful Sea of Cortes on Mexico's Baja Peninsula, this 3,000 square foot home for Patrisha Wright and Debra Zeyen incorporates every manner of universal design to make it comfortable for everyone. In addition to its accessible features, this home was designed to be 'green' and completely self sustainable. Cabo Pulmo village is a delightful sleepy town with no electric service, 10 km of dirt road access and a 1.5 hour drive from tourist hotspot Cabo San Lucas. It is a stunning location for a truly remote retreat overlooking the beach.

The home's layout, presents a series of twists and turns that makes traveling through the space a beautiful experience. Most of the time when you use a wheelchair, you can't get to the ocean. You can't experience being outside. The challenge presented to Cathi House from House+House Architects, was to create a home that was truly accessible for everyone including the homeowners who required access for friends in wheelchairs as well as adaptability as they age. This home was designed with intimate connections to nature all around, with easy access from every space to gardens at the lower level and terraces above, where everyone can enjoy both the drama of this magnificent setting and the seclusion of a hidden oasis. The result is a beautiful, but modest home infused with spatial color, inclusive boundaries and sculpted natural light; creating a home that enables everyone to experience nature.

# THE FLOOR PLAN

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The home is built on two levels. The ground floor is completely self-contained and includes two guest bedrooms that open up onto private terraces, each with their own accessible bathrooms, as well as a laundry room, a living room and a secondary kitchen. It also has a spa with an accessible lift.

## LOWER LEVEL





The ramp connects the ground and second floor that contains the master suite and main living spaces, including a larger kitchen, a dining area and multiple outdoor terraces for enjoying the sweeping views of the Sea of Cortez.

## UPPER LEVEL

# LIVING SPACE

From curved benches to lower counters and outlets to integrated supports and lifts, the home has accessibility features integrated into nearly every aspect of the design without announcing the home as “accessible”.





Photo Credit: House+House Architects

# INTERIORS

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The home's interior has raised electrical outlets and lowered light switches for convenient access. Smooth floors, zero thresholds and ample widths provide comfortable passage.

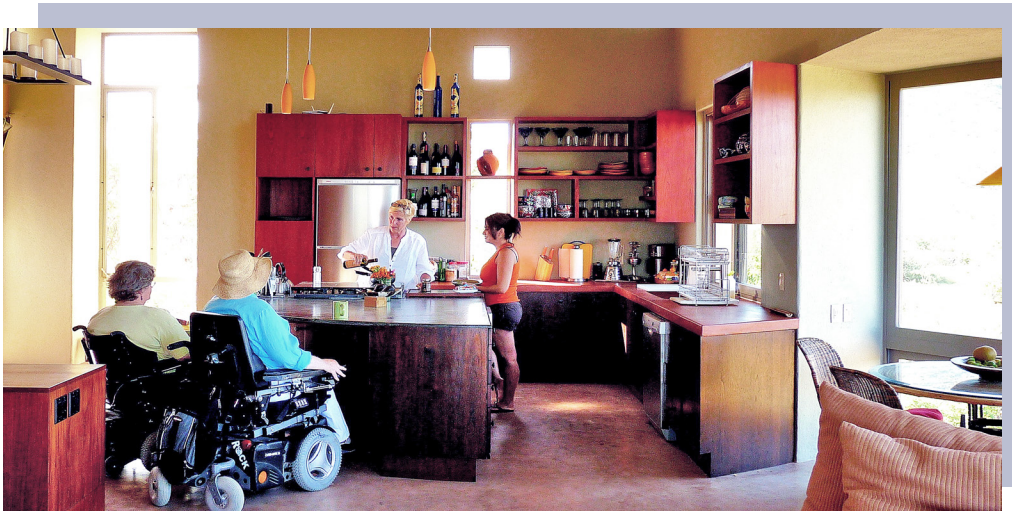
*“Universal design is a way of looking at a space that can meet anybody’s needs. Whether you’re ambulatory, not ambulatory, young, old, it’s creating a situation where you can age in place.”*

*- Deb Zeyen*

# KITCHEN

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The kitchen has been designed to be useable by everyone with wide pathways and countertops with knee clearance. It has the perfect chef's triangle with workspaces designed for comfortable use. It also is easily modified as Deb and Pat's needs change. The cabinets under the sink can be removed for additional knee clearance for wheelchair users. Appliances have been positioned for easy access including microwave and dishwasher.



*Photo Credit: House+House Architects*

# BEDROOMS

The upstairs bedroom has a dual purpose head-board creating a privacy screen for the bathroom. Furniture is positioned to allow for easy access.



Photo Credit: House+House Architects

The ground floor bedrooms have an integrated overhead track system allowing for assisted transfers. The tracks were painted the same color as the ceilings so they would blend in with the overall design of the house.



Photo Credit: House+House Architects



*Photo Credit: House+House Architects*



*Photo Credit: House+*

# BATHROOMS

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All the counters are designed so someone's knees seated in a wheelchair fit comfortably underneath. All the levers are lower and all the shower heads are on cables for easy reach. Toilets are positioned to allow for 180 degree free access all the way around.

The mirrors were custom-made by local artisans and are placed low enough for someone who is seated at the sink to be able to use. All showers, upstairs and downstairs, incorporate rocks and stones from the local beach laid in concrete creating a beautiful and non-slip floor.

# RAMP

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To make the home fully accessible for wheelchair use, a 50-meter long (165 foot) ramp was carefully integrated into the first design sketches. The ramp incorporates a series of landings and switchbacks that angle to create planters and tie the journey to the land and the vistas of the sea. Regardless of their degree of mobility, guests normally choose to walk up the ramp because the views are so beautiful and the journey such a joy. Like the rest of the home's layout, the ramp was meant to present a series of twists and turns that makes traveling through the space a beautiful experience.

Contained below the ramp are spaces for the home's solar battery storage, a backup generator and a cistern for storing rainwater for the garden irrigation. Electricity is gathered by solar panels on the roof and stored in a bank of batteries beneath the ramp to provide power for lighting and all the comforts of home.









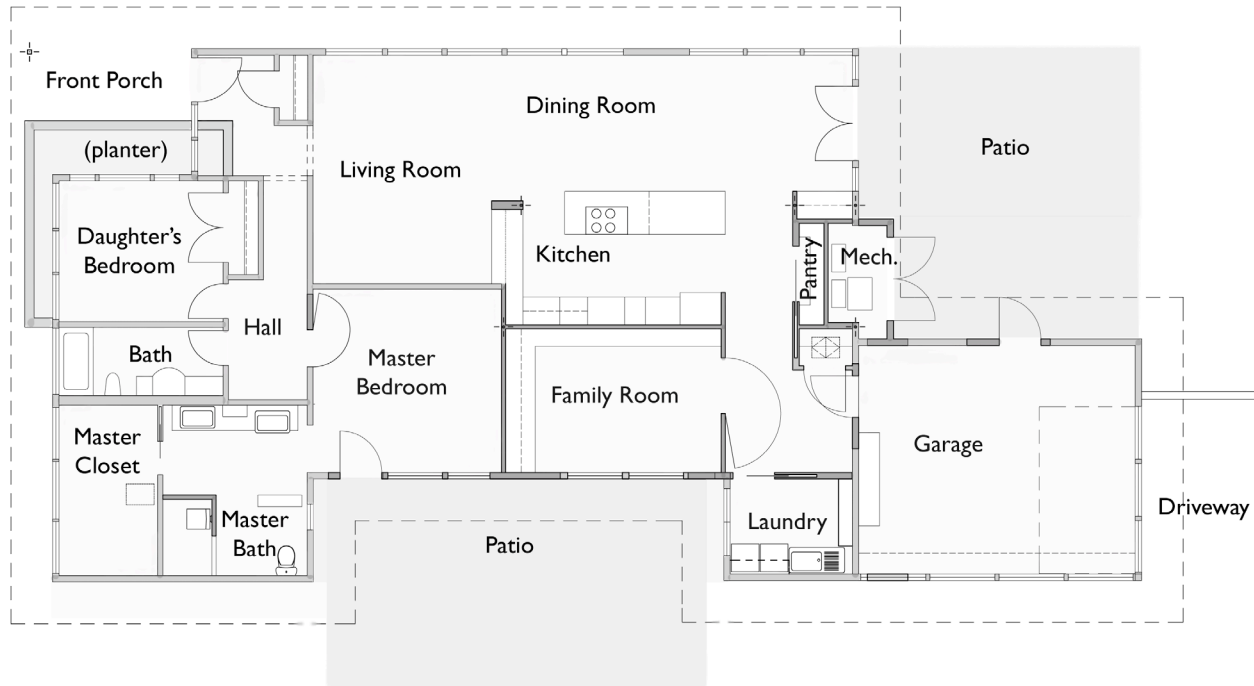
# FAMILY TIME IN THE SUBURBS

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Homeowner Karen Braitmayer is owner and founder of Studio Pacifica, an accessibility consulting company. She is an architect by training and provides code-compliance services for architects, building owners and developers. When she and her husband were looking for their first home together, they knew Karen had particular needs as a wheelchair-user, and they were delighted to find a house that had a ramp from the garage into the house. After being there for 13 years, they decided it was time for a significant upgrade. The two options were either 'go up' or 'go out', but Karen really didn't want an elevator. As an architect, Karen felt like she had overthought it, so she enlisted fellow architect and friend Carol Sundstrom to take a look.

# THE FLOOR PLAN

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# MAINTAINING A SINGLE LEVEL HOME

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Architect Carol Sundstrom was able to reimagine the floor plan to maintain the scale and charm of a single-level, mid-century modern home, within the existing footprint, while adding all the extra space and functionality that Karen and her family needed. "Going up" would have changed the style of the house from a low-slung, mid-century modern into a tall, boxy Seattle-modern house. So, it was a win-win to be able to find all this space without adding a second story.

To do so, walls that enclosed the kitchen were removed, as well as the fireplace and adjacent mechanical room. This created an open floor plan for living, dining and kitchen areas. Decreasing the size of the master bedroom created room for another living space that her daughter and friends could use. Removing walls in the master bathroom made the room easy to maneuver while also seeming larger.

The ramp inside the garage was removed, and the entire garage floor was re-poured to slope from the garage door to the back door of the house. This created room for everyone to move freely in the garage at the same time. With two wheelchairs in the family, this made a huge difference for loading and unloading the ramp van.

# KITCHEN

This kitchen is built for everyone. The taller counter includes knee clearance that enables Karen to reach into corner cabinets, while also being comfortable for standing chefs. The island has two different heights that were customized for the arm reach of both wheelchair-users in the family. The pedestal support at the lowest counter enhances maneuverability by eliminating the obstacle of corner supports.



## MULTI-LEVEL WORK STATIONS

There are four different heights of work surfaces, designed to accommodate each family member's preferences.

*Photo Credit: Kathryn Barnard*



Photo Credit: Kathryn Barnard

## PULL-OUT BAKING STATION & SIDE-OPENING OVEN

This pull-out baking station was designed to be the perfect height for seated use and to stow away when not in use. The side-opening oven makes it easy to remove dishes without reaching over a hot oven door. The sink doubles as a heat-proof surface for offloading of dishes.



Photo Credit: Kathryn Barnard

# HIS & HERS

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The bathroom is both modern and spacious. A single counter accommodates two different top-of-sink heights, with knee space for Karen at the lower sink.

The single-slope shower with a trench drain provides a stable surface for the shower bench, unlike center-drain shower floors.

## FIT FOR A VARIETY OF HEIGHTS

Sinks with the same design, but different heights allow for clean lines while accommodating both Karen and her husband's needs.



*Photo Credit: Kathryn Barnard*





*Photo Credit: Kathryn Barnard*

### **MODIFICATIONS FOR ALL**

The towel rack and adjustable shower head allow for easy reach for both Karen and her husband.



*Photo Credit: Chibi Moku*



# MASTER BEDROOM

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The master bedroom was reduced in size, while still maintaining plenty of room for access around the bed and to the courtyard. Between the master bedroom and bathroom, as well as throughout the house, careful planning made it possible to have zero height transitions between different flooring materials. Windows were added for natural light and were lowered to enable a full view from a seated position or when lying in bed.

The exterior doors all have wheelchair-friendly low profile thresholds that transition smoothly to the hardscaping, providing multiple options for emergency egress.

# HOME OFFICE



## HIDE-AWAY WORKSPACE

The desk in this hidden workspace pulls out at just the right height for Karen's wheelchair and includes built-in charging outlets.



*Photo Credit: Kathryn Barnard*



*Photo Credit: Kathryn Barnard*



Photo Credit: Kathryn Barnard

### ZERO THRESHOLD ENTRY

The garage floor is sloped,  
creating a seamless entry.

*“You should be at home saving your energy for when you’re out, when you will have to expend energy and face inaccessibility. So, for us, coming here, it’s a sanctuary. Our home is an easy place for us to live, enjoy ourselves, entertain. But we are not expending extra energy to do it. We’re saving that for all the fun stuff that we do outside the house.”*

**-Karen Braitmayer**

# UNIVERSAL DESIGN CHECKLIST

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## 1. Entryways

- No-step entry into your home
- Railings on exterior steps
- Clear paths of travel into your home
- Doorbell and mailboxes easy to access

## 2. Main Floor Living

- Accessible full bath
- Main floor bedroom or adaptable space
- Two clear safety exits on the main floor

## 3. Interior Doors, Hallways & Thresholds

- Low thresholds and doorway transitions
- Lighted hallways
- Wide doorways
- Interior doors with lever handles and swing-clear hinges

## 4. Stairways

- Stairways with secure handrails on both sides
- Stairways well-lit
- Convenient layout and width for stair glide

## 5. Bathrooms

- Non-slip surface or tub mat in bathtub or shower
- Grab bars in bathtub or shower area
- Grab bars alongside toilet
- Slip-resistant floor, free of tripping hazards
- Safe access into and out of bathtub or shower
- Fixed and handheld shower wand
- Bathroom has operable window or exhaust fan

## 6. Kitchen

- Adequate counter space
- Kitchen appliances safe and easy to use
- Easy access to storage space
- Cooktop and oven controls safe and easy to use

## 7. Flooring

- Slip-resistant flooring throughout the home
- Carpet is free of tripping hazards; tears or de-threading
- Rugs have slip-resistant backing or double faced adhesive

## 8. Electrical and Lighting

- Convenient location of thermostats and other controls
- Electrical outlets easy to find and use
- Light switches located at the entrance to every room, hallway and stairway

## 9. Heating, Cooling and Ventilation

- Supply and return air vents free of obstruction
- Energy efficient HVAC unit
- Operable windows for cross ventilation and fresh air
- Hot water heater set no higher than 120 degrees F

## 10. Laundry

- Washer and dryer at an accessible location in the home
- Washer and dryer at an accessible height
- Convenient counter space

## 11. Clutter

- Rooms, hallways and exits free of clutter
- Floors and stairs free of tripping hazards

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